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NORTH PUGET SOUND AREA, SKAGIT AND WHATCOM COUNTIES, WASHINGTON. ECONOMIC BASE ANALYSIS AND PROJECTION, 1960-2010

Public Health Service
Portland, Oregon

November 1964

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COLUMBIA RIVER BASIN PROJECT
For Water Supply and Water Quality Management

NORTH PUGET SOUND AREA
SKAGIT AND WHATCOM COUNTIES, WASHINGTON
ECONOMIC BASE ANALYSIS AND PROJECTION
1960 - 2010

DATE: November 1964

Prepared by _____

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Region IX

Division of Water Supply and Pollution Control
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NORTH PUGET SOUND AREA
Skagit and Whatcom Counties, Washington

ECONOMIC BASE ANALYSIS AND PROJECTION
1960 - 2010

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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A. Present Economic Base and Population

1. Industry and Employment

Skagit and Whatcom Counties, referred to in this report as the North Puget Sound Area, are within the Seattle Region, Seattle providing some of the specialized commercial and professional services for the area. The well-diversified economic base of the North Puget Sound Area rests upon three natural resources: (1) rich agricultural land along the Puget Sound littoral, providing the material for food processing industries; (2) forests, providing materials for lumber, plywood and pulp manufacturing; and (3) the Puget Sound itself, which provides sea food for processing and supports recreation and boat-building industries. A fourth major element in the economic base of the area, petroleum refining, is also partly dependent upon the Puget Sound location, since the crude petroleum for the Anacortes refineries is partly supplied by tanker, as well as by pipeline from Canada.

In the Skagit and Whatcom two-county area, the total labor force in April 1960 was about 45,000, of whom about 8,900 were employed in manufacturing. Within the manufacturing group, the industry with the largest employment is lumber and wood products manufacturing, which includes plywood. Employment in this industry group declined during the 1950-60 decade by about 30 percent, but it still provides about a third of all manufacturing jobs. Other types of manufacturing basic to the area are (in order of employment) food processing, petroleum refining, and pulp and paper manufacturing. Data on employment by industry are shown in Table 1.

During the 1950-60 decade, the number of jobs in the area increased by about 4,500. The decline in lumber and wood products jobs was just offset by the new employment at the three petroleum refineries established during the decade. Additional growth in the other manufacturing categories added to the diversification of the area's economy. Two other major changes in employment during the 1950-60 decade followed well-established national trends: agricultural employment declined sharply, and "service" industries' employment increased as a proportion of total employment. Table I shows the substantial increases that occurred in employment in education, professional services, retail trade, and personal services.

The nature of the economic base of the tw ounty area is further revealed by Table II, which shows the percentage distribution of the labor force, by industry, in that area compared with the distribution in the U. S. as a whole. Basic industries in which the North Puget Sound Area specializes (i.e., in which the relative portion of the labor force substantially exceeds the national average) include the following: agriculture, forestry and fisheries, lumber and wood products, food processing, pulp and paper, and petroleum refining. Relatively high employment in certain service industries (retail trade and personal services) can be attributed to tourist and recreation activity. As for the relatively high employment in construction, education and professional services, it is considered that these result from special local conditions and are not part of the basic employment of the area.

Table III lists the principal manufacturing establishments in the two-county area. The list includes all firms with 20 or more employees, excluding printing and publishing establishments. Of the 69 firms included, 28 are in food processing; 21 in lumber, plywood,and other wood products; 3 in pulp and paper; 3 in petroleum refining; and 3 in ship or barge construction. Most of the products of the remaining 11 firms are for the local economy. Table III, therefore, confirms the dependence of the area's economy upon agriculture and fishing and the processing of their products, timber-based products (including pulp and paper), and petroleum refining.

TABLE I

EMPLOYMENT, BY INDUSTRY, NORTH PUGET SOUND AREA
(Skagit and Whatcom Counties)

Industry	April 1960 Employment			April 1950 Empl.	Change in Empl. 1950-1960
	Skagit Co.	Whatcom Co.	Skagit + Whatcom Cos.	Skagit + Whatcom Cos.	two Cos.
Agriculture	2,000	2,670	4,670	6,902	-2,232
Forestry and fisheries	161	300	461	781	- 320
Mining	21	24	45	255	- 210
Manufacturing, Total	4,307	4,566	8,873	7,376	+1,497
Lumber, wood prod., furn.fix.	1,581	1,165	2,746	3,892	-1,146
Primary + fabr. metals	36	112	148	124	+ 24
Machinery (incl. elec.)	358	120	478	230	+ 248
Other durables	286	615	901	509	+ 392
Food processing	743	1,017	1,760	1,469	+ 291
Textiles and apparel	12	73	85	35	+ 50
Print, publ.	161	317	478	358	+ 120
Chemical and allied	36	24	60	39	+ 21
Pulp and paper	125a/	779d/	904	600h/	+ 304
Petroleum refin.	820b/	287e/	1,107	-	+1,107
Other non-dur., and misc.	149c/	57c/	206	120h/	+ 86
Construction	1,360	1,927	3,287	2,448	+ 839
Transportation	484	764	1,248	1,335	- 87
Communications, Utilities	357	821	1,178	1,052	+ 126
Wholesale Trade	430	732	1,162	962	+ 200
Retail Trade	2,861	4,138	6,999	6,026	+ 973
Fin.,Ins.,R.E., Bus.& Rep.Serv.	754	1,215	1,969	1,887	+ 82
Personal Services f/	1,142	1,906	3,048	2,104	+ 944
Education	922	1,902	2,824	1,582	+1,242
Professional & relatedg/	1,525	1,750	3,275	2,029	+1,246
Public Administration	688	861	1,549	1,386	+ 163
Industry not reported	257	326	583	575	+ 8
Total, Emp.Civil.Lab.Force	17,269	23,902	41,171	36,700	+4,471
Unemployed	1,627	2,163	3,790	2,608	+1,182
Military	165	223	388	301	+ 87
TOTAL LABOR FORCE	19,061	26,288	45,349	39,609	+5,740

a/ Estimate for Scott Paper Mill at Anacortes.
b/ Estimate for Shell (55,000 barrels/day) and Texaco (45,000 barrels/day) refineries at Anacortes, assuming a ratio of 122 barrels/day per employee, which was the average for the State of Washington in 1960.
c/ Estimated as a residual after deducting pulp and paper and petroleum refining from U.S. census figure for "other non-durables" group.
d/ Estimate for Georgia-Pacific (formerly Puget Sound Pulp and Timber) plant at Bellingham, based upon "covered employment" statistics for Whatcom County.
e/ Estimate for Mobil refinery at Ferndale (35,000 barrels/day), assuming a ratio of 122 barrels/day per employee, the State average in 1960.
f/ Includes private household workers, other personal services and entertainment and recreation.
g/ Includes hospitals, welfare, religious, non-profit organizations, professional and related.
h/ Estimated.

TABLE II

PERCENTAGE DISTRIBUTION OF EMPLOYMENT, BY INDUSTRY
NORTH PUGET SOUND AREA (SKAGIT AND WHATCOM COUNTIES)

Industry	Skagit + Whatcomb Co's. April 1950	Skagit + Whatcomb Co's. April 1960	U. S. April 1960
Agriculture	17.4%	10.3%	6.1%
Forestry & fisheries	2.0	1.0	.1
Mining	.6	.1	.9
Manufacturing, Total	18.6	19.6	25.1
Lumber, wood prod., furn., fix.	9.8	6.1	1.5
Primary and fabricated metals	.3	.3	3.6
Machinery (including electric)	.6	1.1	4.4
Other durables	1.3	2.0	4.6
Food processing	3.7	3.9	2.6
Textiles and apparel	.1	.2	3.1
Printing, publishing	.9	1.1	1.6
Chemicals and allied	.1	.1	1.2
Pulp and paper	1.5	2.0	.7d/
Petroleum refining	- a/	2.4	.2d/
Other non-durables, and misc.	.3	.4	1.6d/
Construction	6.2	7.2	5.5
Transportation	3.4	2.8	3.9
Communications, Utilities	2.7	2.6	2.5
Wholesale Trade	2.4	2.6	3.2
Retail Trade	15.2	15.4	13.7
Fin., Insur., R. E., Bus. and Repr. Serv.	4.8	4.3	6.2
Personal Services b/	5.3	6.7	6.2
Education	4.0	6.2	4.8
Professional and related c/	5.1	7.2	6.0
Public Administration	3.5	3.4	4.6
Industry not reported	1.4	1.3	3.7
Total Employed, Civilian Labor Force	92.6	90.7	92.5
Unemployed	6.6	8.4	5.0
Military	.8	.9	2.5
TOTAL LABOR FORCE	100.0	100.0	100.0

a/ Less than .05 per cent.
b/ Includes private household workers, other personal services, and entertainment and recreation.
c/ Includes hospitals, welfare, religious and non-profit organizations, professional and related.
d/ Estimated from data for 1960 from 1961 Annual Survey of Manufactures, U. S. Dept. of Commerce, Nov. 1962.

TABLE III

PRINCIPAL MANUFACTURING ESTABLISHMENTS, NORTH PUGET SOUND AREA, 1964
Manufacturing Establishments in Skagit and Whatcom Counties
With 20 or more Employees, by S.I.C. Class a/

S.I.C. Class	Industry	City	Firm Name	Product	No. of Employ.
20	Food Processing	Anacortes	Farwest Fisheries	Fish products	100-249
		Anacortes	Fisherman's Pack'g	Processed fish	20-249s
		Anacortes	McDugle Wagner Dairy	Ice Cream	20-49
		Anacortes	McGregor Seafoods	Fish packing	20-99s
		Anacortes	Morgan & Morgan	Oyster packing	20-49
		Anacortes	Sebastian & Stuart	Fish products	10-99s
		Bellingham	Bellingham Baking	Baked products	50-99
		Bellingham	Bellingham Canning	Canned Salmon	50-99
		Bellingham	Bornstein Seafoods	Frozen fish	20-99s
		Bellingham	Bumble Bee Seafoods	Fish products	10-249s
		Bellingham	Dahl Fish Co.	Frozen fish	50-99
		Bellingham	Hillview Dairy	Ice Cream	20-49
		Bellingham	Whatcom Co. Dairymen	Milk, cheese	100-249
		Blaine	Alaska Packers	Canned salmon	50-249s
		Burlington	Cascade Froz. Foods	Froz. fruit, veg.	50-499s
		Burlington	Natl. Fruit Canning	Froz. berries	50-99
		Burlington	N. W. Darigold	Oyster stew	20-49
		Burlington	Consol. Dairy	Butter, powd. milk	100-250
		Everson	Kale Canning	Can. beans, beets	50-99
		LaConner	Moore, R. V.	Froz. fish petfood	10-49s
		LaConner	San Juan Is. Cannery	Can. vegs.	20-49
		Lynden	Breyer Ice Cream	I.Cr.,froz.fruits	500-2500s
		Lynden	Lynden Berrygrowers	Froz. berries	10-249s
		Mt. Vernon	Carnation Co.	Evap. milk	50-249s
		Mt. Vernon	Consolidated Dairy	Dairy Products	10-49s
		Mt. Vernon	Frigid Food Prod.	Froz. berries	4-499s
		Mt. Vernon	Libby,McN., & Libby	Froz. foods	100-499s
		Mt. Vernon	Stokely VanCamp	Froz. berries,vegs.	50-999s
24	Lumber and Wood Products	Anacortes	Anacortes Veneer	Plywood	500-999
		Anacortes	Pioneer Shingle	Cedar shakes	20-49
		Bellingham	Brooks Lumber	Wood products	50-99
		Bellingham	Haley Int'l Corp.	Treated lumber	20-49
		Bellingham	Mt. Baker Plywood	Plywood	100-250
		Bellingham	Mt. Shukson Veneer	Plywood	20-49
		Bellingham	Oeser Cedar Co.	Treated poles	20-49
		Bellingham	Robinson Plywood	Plywood	100-249
		Bellingham	Washington Loggers	Logging	20-49
		Bellingham	Ritchie Shake Mill	Cedar Shakes	20-49
		Concrete	Hurn Shingle	Cedar shakes	20-49
		Concrete	LeVaque Co.	Shakes	10-49s
		Concrete	Skagit Veneer	Lumber	20-49
		Concrete	Hornbeck Bros.	Logging	20-49

(Continued)

TABLE III, cont'd

S.I.C. Class	Industry	City	Firm Name	Product	No. of Employ.
		Deming	H.& H. Products	Shakes, shingles	20-49
		Everson	Great Western Lumber	Lumber	50-99
		Hamilton	Bridge Bros.	Lumber	20-49
		Hamilton	Van de Grift Co.	Logging	20-49
		Mt. Vernon	Witco. Co.	Wood decor.access.	20-99s
		Sedro-Woolley	Goodyear Nelson	Lumber	20-49
		Sedro-Woolley	Willis R. & P.	Wood chips, lumber	100-250
26	Pulp and Paper	Anacortes	Scott Paper Co.	Pulp	100-250
		Bellingham	Ga.Pacific(paper mill)	Tissue papers	250-499
		Bellingham	Ga. Pacific(pulp mill)	Pulp	500-999
28	Chemicals	Anacortes	N.W. Petrochemical	Phenol,cresol.	10-49s
29	Petroleum	Anacortes	Shell Oil	Petrol.refining	500-999
		Anacortes	Texaco Oil	Petrol.refining	250-499
		Ferndale	Mobile Oil	Petrol.refining	250-499
32	Stone, Clay & Glass Prods.	Bellingham	B'ham Bldgs. Supp.	Concrete prod.	50-99
		Bellingham	Lind Gravel	Concrete prod.	20-49
		Bellingham	Permanente Cement	Cement	100-249
		Concrete	Lone Star Cement	Cement	100-249
		Mt. Vernon	Mt. V. Sand & Gravel	Concrete prod.	50-99
		Lynden	Whatcom Bldg. Supp.	Pre-cast concrete	10-49s
34	Fabricated Metal	Bellingham	Weldcraft Steel	Boats, tanks	10-49s
		Bellingham	Weldit Tank & Steel	Barges, tanks	20-49
		Sumas	Elebaas Co.	Tanks, mach'y.	20-49
35	Machinery	Sedro-Woolley	Skagit Corp.	Hoists, log.mach'y	250-499
37	Transportation Equipment	Bellingham	B'ham Shipyards	Steel barges	20-499s
		Bellingham	United Boatbuild'g	Fibreglass boats	50-99
		LaConner	Skagit Plastics	Fibreglass boats	50-99

a/ S.I.C. refers to the Standard Industrial Classification system of the U. S. Census of Manufactures. Firms in the printing and publishing classification have been omitted from the above list, since they are not related to water supply problems, nor are they part of the "basic" or "export" employment of the area.

b/ The letter "s" after the employment figures indicates that the range given includes a seasonal variation.

Source: Wash. State Dept. of Commerce and Ec. Development, Directory of Wash. State Manufactures, July 1964.

2. Population

The 41,559 jobs (civilian and military) itemized in Table I supported, as of April 1, 1960, a population of 121,435 in the two-county area. Table IV shows the allocation of this population among the cities and unincorporated parts of the area. For purposes of analysis, the sparsely inhabited eastern portions of the two counties have been separated from the more densely-settled urban and suburban portions along the Sound. The study area's population increased by about 11,000 during the 1950-60 decade. Nearly all of this increase occurred in the relatively densely-settled western portion of the two counties, most of it in Skagit County. Areas of notable growth were Mt. Vernon, Anacortes and Ferndale, the latter two showing the effects of the establishment there of petroleum refineries.

B. Projected Economic Base and Population

1. Factors Influencing Future Growth

The future growth of the North Puget Sound Area will depend upon the further development and exploitation of the same basic resources and locational advantages that are now the support of the economy. Of these, no increase in the total harvest and processing of seafood is anticipated during the study period. It is also expected that the total timber harvest will remain at about the present level or decline slightly, although useage will shift away from sawmills to pulp and plywood. There is a potential for increased agricultural production and, therefore, for a greater volume of fruit and vegetable processing and preparation of dairy products. The petroleum refineries at Anacortes and Ferndale have a total capacity equal to about 60 percent of present demand for gasoline in the Puget Sound area. Projected plants near Everett would, as assumed in the

previous Snohomish Basin Study, double this capacity by 1985. Growth in demand, and the extension of the area supplied to other portions of the Northwest, beyond the Puget Sound area, would permit further expansion at Ferndale and Anacortes.

TABLE IV

POPULATION, NORTH PUGET SOUND AREA, BY URBAN AND RURAL AREAS
(Skagit and Whatcom Counties)

Place or Area	April 1, 1950	April 1, 1960
URBAN AND SUBURBAN PORTIONS, TOTAL [a]	103,884	115,328
Skagit County	40,320	48,419
Communities, Total	19,064	24,317
Anacortes	6,919	8,414
Burlington	2,350	2,968
Hamilton	294	271
LaConner	594	638
Lyman	378	400
Mt. Vernon	5,230	7,921
Sedro-Woolley	3,299	3,705
Suburban	21,256	24,102
Whatcom County	63,564	66,909
Communities, Total	40,271	41,785
Bellingham	34,112	34,688
Blaine	1,693	1,735
Everson	345	431
Ferndale	979	1,442
Lynden	2,161	2,542
Nooksack	323	318
Sumas	658	629
Suburban	23,293	25,124
NON-URBAN AND RURAL PORTIONS, TOTAL [b]	5,855	6,107
Skagit County	2,953	2,931
Community		
Concrete	760	840
Non-Urban or Rural	2,193	2,091
Whatcom County	2,902	3,176
Non-Urban or Rural	2,902	3,176
TOTAL POPULATION - Two-County area [c]	109,739	121,435

a/ Includes all of Skagit County except Census Divisions 1 and 2, and all of Whatcom County except Census Divisions 1, 2, and 12; this corresponds to the area designated as "densely populated" in the North Cascades study.

b/ Includes Skagit County Census Divisions 1 and 2, and Whatcom County Census Divisions 1 and 2; this corresponds to the area designated as "sparsely populated" in the North Cascades study.

c/ Whatcom Census Division 12 (Point Roberts) is not included in the study area.

2. Projected Industrial Production

On the basis of the factors indicated in general terms in the previous paragraph, the following rough projections, for planning purposes, are suggested for production in each of the principal industries in the North Puget Sound area:

a. Food processing.--Employment in food processing increased during the 1950-60 decade at an average rate of 1.8 percent per year. Included within this category was some increase in processing of seafood. Since no future increase is being projected for seafood processing, the rate of increase during the study period is likely to be somewhat less than 1.8 percent. For purposes of this study, it is assumed that the volume of output at food processing plants (other than seafood) in the area will increase at about 1.5 percent per year, a rate which would mean that 1985 volume would have increased by about 50 percent as compared with 1960 and that 2010 volume would have about doubled, as compared with 1960.

b. Pulp.--Even though no increase in total timber harvest in the area is anticipated, some increase in pulp production can occur, through diversion to pulp making of logs now used for lumber, and through the greater utilization of residues, wastes and marginal species. A negative factor for the outlook of pulp production in the area is the fact that, at present, a large share of the raw material for pulp making comes from British Columbia, in the form of chips. As the pulp capacity in British Columbia expands in the future, at least part of this supply may find a market within British Columbia itself. Nevertheless, the diversion of logs away from sawmills and more efficient utilization should be able to support some expansion of output at the mill at Bellingham. For purposes of this report, it is assumed that output will increase during the study period at an average rate of about 1 percent per year, the same rate assumed in a previous report for growth in output at the mills at Everett.

At this rate, output at Bellingham would increase from the present 470 tons per day to about 600 tons by 1985 and about 800 tons in 2010. There is a probability that the present pulp plant at Anacortes will be closed down in the future, and, for purposes of projecting future water needs and water pollution, it is assumed that by 1985 there will be no pulp production at that site.

c. Petroleum refining.--Growth in demand is expected to justify expansion of refining capacity at Anacortes and Ferndale. For planning purposes, it is assumed that capacity at the three refineries in the area will double by 2010.

d. Aluminum.--In 1964, International Aluminum Co. announced plans to construct an aluminum smelter at Ferndale. Selection of the site was based upon its deep-water ocean shipping facilities and the availability of low-cost electricity. Initial capacity will be 200 tons per day. It is assumed that growth of markets will justify expansion of capacity in the future, and, for purposes of this study, it is assumed that output will be about 400 tons per day in 1985 and about 600 tons per day in 2010.

e. Other Industries.--In addition to growth in the basic industries just described, it is assumed that diversified manufacturing in the area will increase, and that service industry employment will increase, not only absolutely but relative to "basic" or "goods" employment.

3. Projected Population.--While the previous section gives a broad indication of the industrial categories in which growth is likely to occur, no attempt has been made in this report to project employment in order to derive the future population that would be supported by the labor force. Rather,

reliance has been placed on a ratio method for determining population, on the basis of trends in the area's percentage of Washington State population. The projection of Washington State population used here is that suggested in May 1964 by the Economics Subcommittee of the Columbia Basin Inter-Agency Committee. According to that projection, Washington State population would increase from 2.87 million in 1960 to 4.70 million in 1985 and 7.92 million in 2010. This would represent a rate of increase for the state of about 2.0 percent per year. The North Puget Sound Study Area has grown at a rate substantially below that for the state as a whole during recent decades. The average annual rate of increase for the study area during the 1930-60 period was about 0.9 percent, compared with about 2 percent for the state as a whole. It is expected that the study area will continue to grow at a rate less than that for the state, although the disparity between the two rates will not be as great in the future, due to the spread northward of growth from the Seattle Metropolitan Area. For purposes of this report, it is assumed that the study area's population will increase at a rate of 1.2 percent per year during the 1960-2010 period. At this rate, the population of the study area would increase from 121 thousand in 1960 to 163 thousand in 1985 and 218 thousand in 2010.[a/]

The distribution of this projected population between the "urban-suburban" and "non-urban-rural" portions of the area shown in Table IV is expected to continue to be about as it is at present. For planning purposes,

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a/ This projection for the Skagit-Whatcom two-county area is the same as that adopted in the Columbia Basin Inter-Agency Committee's North Cascade Mountains Study, January 31, 1964, Table 1.

it is assumed that the population of the area designated "non-urban and rural" will increase from 6.1 thousand in 1960 to about 7 thousand in 1985 and about 8 thousand in 2010. The remainder of the projected study area population would be in the "urban and suburban" portion; that is, about 156 thousand in 1985 and 210 thousand in 2010.

No attempt should be made to forecast the future population of individual cities in the study area without economic base studies of the cities concerned. However, for planning purposes, it is suggested that a reasonable assumption would be that the individual cities in the study area will grow at the average rate for the area as a whole; that is, about 1.2 percent per year.